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Biological Hazar Risk Analysis and Management During Sars-Cov2. European Digital Green Certificate A Discussion

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Abstract

The paper discusses the green pass innovation from the biological hazard risk management point of view comparing it to other political solutions and management of risk like lockdown. The result of the research and discussion point out the false use of this technology in order to manage and mitigate risk. The management of a biological hazard risk can use such technologies but it must be clear the efficiency and the effectiveness expected. The green pass seems more a organizational or marketing innovation that could be useful for some purpose but not to manage or mitigate risks as it was claim in some country. Stressing the technology and to constrain activities if and only if this technology is used, has been proved not to be efficient and effective. The discussion underline that use the green pass is a political trick or a gamble to show a proactivity. The use of green pass with these intention show lack of creative alternatives and cost benefit analysis as was done for lockdown. For those meanings and not because of freedom reduction, that is another and more ethic discussion, the mandatory use of green pass is not the correct form to plan or manage biological hazard risk.

Keywords: Green pass, biological hazard, Efficiency.

1. Introduction

Many blames lockdowns as unacceptable measure against freedom, but they don't discuss alternatives, like, for example the Sweden approach to pandemic spread. Like the lockdown a green pass is used in some countries as a form of compulsory social control. A green pass was first used in Israel to prove the holder has been fully vaccinated or recovered from COVID. Measures like green pass are used in Korea, Japan and other countries all over the world but the European Green Pass is the only one launched for a group of countries. The European green pass grants access to indoor restaurants, bars, cafes and other indoor venues and of course transport public network. Some government like France and Italy uses it as a measure in many activities to restart and recover economy and recently Italy has ruled the green pass mandatory use for many activities and for workers.

The main goal claimed by the European union for the green pass is to allow all subjects to be able to travel without restrictions all over Europe and inside each country. European Member States (MS) have agreed on a common design of this new European document that is first example all over the world of a multinational health certification. All for that, someone cynically said the green pass innovation was not strictly necessary to manage risk but stressed by economic (i.e. touristic sector) impulse, however must be said that was defined in January 2021, in parallel of the decision European Union to begin to rush the vaccination through all counties to reach herd immunization before September 2021.

"Infringement of freedom" and "negative economy impacts" started not with the green pass but before. This paper woks green pass technology and social innovation but we consider in this work the biological hazard risk management assuming green pass part of the whole package developed by the government for certification and risk control. The question we discuss here is how much it is really useful, efficient and what are green pass benefits to manage the biological risk. Seeking efficiency and effective complementary to vaccination

public measures this paper discusses this innovation in the whole context of biological hazard management measures which green pass seems must to be included.

Our goal is to discuss those measures first because, not surprisingly, there are protest against green pass mandatory use, second because lockdown and green pass are extreme measures against citizen freedom and must be justified with a benefit and, third, because use of green pass it's claim to be against personal data privac. So, the hipóteses of the work is that the use of the innovation or the new technology seems more a political trick than something very useful to combat or even manage the pandemic spread. The paper will prove that not the green pass but mandatory green pass, is not efficient and effective as control and management of biological hazard, but is an innovation for health systems.

As a justification of the work, we assume that, as we argue in other paper published, that government and institutions have really failed to propose good alternatives and to use green pass to reduce social and economic costs. In other word all over the world the government have failed to propose a real biological hazard risk management, many alternatives weren't sought and aren't been explored by most of actors in their countries. This is a huge governance flop not a success as claimed with the launch of free pass. The paper is based on bibliographic research about the characteristic of the green pass innovation and the link or the fitness in the more academic discussion about biological hazard risk analysis. A summary result and a conclusion end the paper.

2. Discussion

2.1 Exploratory analysis of literature.

Following the information in Europe Union, a first draft of the EU Green Certificate was presented in March 2021 by the European Commission. According to the EU, the current EU Digital COVID Certificate will be in place for 12 months, counting from the official launch date, July 1st, 2021. It will be used until June 30th, 2022.

The launch of green pass was the EU's goal to provide a common approach to mobility during the pandemic, as well as to generate efficient, interoperable systems. The idea of having a COVID health passport has created great debate among some EU Member States. However, a common solution was delivered in order to restore mobility and freedom of movement as of June 1st, 2021. However, the COVID certificate is not a substitute for a travel document. So, the aim of the EU Digital COVID Certificate defined by European Union is to "facilitate travel, helping to exempt holders from restrictions such as quarantine" according to a European Commission press release. The EU Digital COVID Certificate is compatible with local EU COVID passes, like the French Pass Sanitaire.

As health certificate the EU Digital COVID Certificate serves as proof that a person has been vaccinated against COVID 19, has recently received a negative COVID 19 test, or is protected against the disease after being infected (recovery valid for up to 6 months). And about privacy is clear that only strictly necessary information will be shown in the EU COVID certificates. This includes the following:

- Traveler's name
- Traveler's date of birth
- Member State that is issuing the certificate • Unique identifier or code of the document

Depending on the proof of immunity presented by visitors, the following data can be also included:

Vaccinated individuals

- Type of vaccine
- Vaccine's manufacturer • Number of doses
- Date of vaccination

Passengers with a negative test

- Type of test taken
- Date and time of the test • Test center
- Result (negative)

The European union doesn't decide the health passes be mandatory to travel. It will simply help to standardize the method of COVID immunity verification at national borders. The European Commission has been clear about the EU's position regarding this issue: the COVID certificates in Europe will not act as a new barrier for international travel, but instead they aim to facilitate and ease freedom of movement. The green pass has a great marketing communication like lockdown measures in Europe to claim the "correct" and unique response of the Union against other block reaction to Covid-19 pandemic.

Lockdown measure was widely discussed but not everyone approved it. in a quick analyst was found in wikipedia a touch of articles discussing lockdown. According to Smith and Pau, Baker *et al.*, Yarmol-Matusiak *et al.*, Folkestad & Sigrid, Juranek *et al.*, is possible to warned that early relaxation of restrictions has greater costs. Some studies the study did not find evidence for greater disease control in the countries with more restrictions than in other with less restrictions, they compared the impact of 'less restrictive interventions' on the spread of COVID-19 in Sweden and South Korea, with mandatory stay-at home orders in 8 other countries.

In Italy Vinceti Marco *et al.*, underline in the abstract that "an effective reduction in community transmission occurred during a strict national lockdown, and that earlier less stringent measures were ineffective at reducing mobility to a level low enough to reduce the spread of COVID-19". In accordance with Perra who reviewed 348 articles there was unanimous acknowledgement of the importance of social interventions in controlling the spread of COVID-19, however with high societal costs. These are not evaluated yet. In addition a statistical world-wide data base of pandemic and its effect is not available and reliable. As was admitted even in Europe and USA not all countries, included many European countries, has reliable databases or statistical reports that cover all questions about SARS COV-2. The maior evidence came from China that refused to send reliable informations to all other counties.

There was also a Great Barrington Declaration in October 2020 which called for "Focused Protection" to impose minimal restrictions on the general population to achieve herd immunity through COVID-19 infection. And against indiscriminate lockdown Ranu Dhillon and Abraar Karan in US, argued for "smarter lockdowns". The idea was to impose restrictions on areas with high levels of transmission. The method to i vulnerable populations in these locations to offset the economic costs of a lockdown policy.

However, ONU warned (ONU 2020) in a report that pandemic restrictions exacerbate gender inequalities and have led to an increase in domestic violence. Many women are being forced to 'lockdown' at home with their abusers

at the same time that services to support survivors are being disrupted or made inaccessible.

Both the World Food Programme (WFP) and the World Health Organization (WHO) have published statements noting the impact of the lockdowns on livelihoods and food security, and Dr David Nabarro, WHO Special Envoy on COVID-19 stated in October 2020 that "lockdowns just have one consequence that you must never ever belittle, and that is making poor people an awful lot poorer".

There is a problem to understand how economists generally can supported increased government funding for mitigation efforts, even at the cost of tolerating a very large economic contraction. Without causality proved research they agreed that lockdowns should continue until the threat of resurgence has declined, even when considering only the economic impact. There was consensus that "severe lockdowns" are likely to be better for the economy in the medium term than less aggressive measures".

But there was evidence that the discussion of costs arise not only for economic costs but for public services like, of course, health but education. Schools and universities had to transition to online learning. Teachers and faculty were not prepared to new ways to engage with students and to use new platforms. The online teaching tools are podcasts, videos, and virtual classrooms became common but not wide accepted or loved.

Finally, we know from social and newspaper and television programs that there were also been a number of protests over responses to the COVID-19 pandemic worldwide, specifically in opposition to lockdowns, including in the United Kingdom, the United States, Germany, the Netherlands, Canada and New Zealand. Recently in Italy and France against the mandatory use of green pass. Because the varied motivations for and sizes of these protests have been spurred by the economic and social impacts of lockdowns, but have also been associated with misinformation related to the pandemic, conspiracy theories and anti-vaccination. How this evaluation is correct it's a political discussion.

3. Green pass assessment

The European green pass is a health technology innovation and was presented as the last sequel of MS proposal during 2020 and 2021. it is also called EU Digital COVID Certificate and entered into application on 01 July 2021 all over Europe. This innovation, based on digital data, allows EU citizens and residents to have their vaccination certificates issued and verified across the EU using digital meanings or smart telephones.

The pass seems for a number of citizens not in line with fundamental principles of human and constitutional rights, adopted without a common law process and public discussion. We underline in the paper that alternative and different measures to lockdown and green pass were not shown and not proposed by prime ministers, showing, at last that there is a great level of conformation or control over press, television and social network, or conformation of the social communication with government.

Seeking the main objective of the paper: to discuss the innovation, we underline that the green pass innovation has the following characteristics: QR code, free of charge, in national language and English, valid in all EU countries. The digital version can be stored on a mobile device but there is also a paper version. Both will have a QR code as

well as a digital signature to make sure the certificate is authentic. Each country has a slightly different plan for how the passes work. There is also a little difference between a green pass from the European Covid Digital Certificate (EUDCC). The EUDCC currently operates as a travel pass across EU member nations. Some countries are using their own apps or paper documentation created before the existence of the EUDCC. It something less than a European health card and something more than a certificate, so a hybrid but very costly.

3.1 Innovation. Oslo Manual insights.

In terms of Oslo Manual the green pass is a disruptive innovation because change dramatically the relation government - citizens in term of healthcare. For the first time is possible to verify the health of one citizen all over Europe. The innovation technology allows to use the same application extended to other disease and possible infection only leaving the base informations stored into the national population health data base. In our view, using the four types of innovation discussed into the manual, it is not a product or a service innovation but a mix of organization and marketing. The green pass is something derivate from smart money or identification cards applied to hospitals or health insurance system, and as a service it is possible to see that the tele medicine already used a digital exchange of patient data set.

The disruptive innovation could be sought into a new form of change informations between health systems reducing bureaucracy and useless manual control. The health department of any health system could reformulate their organization exchanging informations and reduce personnel in charge of controls and paper manipulation. It's also a great marketing innovation that assure quality and visibility of the participating health system. This is derived by considering the importance of internal controls, privacy verifications, status symbol.

The specific technology and the platform of the system is not our goal in this paper but we consider the implication of an international digital system based on a Qr code and the permissions and cross control in many countries simultaneously. This implies equipment and software developed only for this task and the huge amount of data processing required the implies employment and productions of electronic devices. It also implies growth of device like smart phones and account numbers (for telephone and mixed companies) selling.

3.2 Biological hazard management. The Pareto statements.

So then to continue the analysis we must consider the biological hazard risk management. We must underline that doing that analysis, our base hypothesis of to have a green pass is different from the main "no-vax" protest that states that green pass discriminate people who was pro or against vaccination. That is an old question. We strength in risk management, the threat of a mandatory use of green pass not because we are against vaccination, that is necessary and a proved way to eliminate risks, but because we argue that as innovation is not an efficient and not provide effective service, or the service claimed by politicians. Like lockdown, in our view, the cost - benefit of such measure wasn't well foresee or calculated.

Risk management is a five-step process of identifying and

analyzing risks and taking steps to reduce or eliminate them.

Figure 1 - Five step CDC risk management.

fonte: <https://www.cdc.gov/csels/dls/point-of-care-testing.html>

The green pass to be used as risk management tool must be directly connected to step four: put the control into practice. But it will assess the risk? In our opinion only as European Union claim to be used: traveling into close spaces for long

period of time as airplane or long distance train.

Very well be sure that in planes or traveling no one is infected, and this could be done controlling all. But in other case the best choice to manage the pandemic risk is a sample control, assuming people is responsible for his health and if found guilty must assume consequences. So the technology must reduce costs of control and could be used to monitor and control all that are not “healthy” seeking into databases and verifying their movement into the territory.



Then the green pass is useful for that purpose and a waste of time to show it anytime to show our immunization.

How biological hazard risk management could be the most efficient? First with a contingency plan all over public places, workplaces and shopping places that involves owner and managers, workers and clients. Second monitoring and control activity and infected people. If that doesn't imply to lock everyone. The goal of a monitor and control management of a risk is to limit the bad cases not all. In management practice is used a trick, derivate from the former Pareto analysis, that states that 80% of troubles became form 20% of causes. So, the better way (more efficient and effective) to lock the pandemic spread is to control all cases of infection and not the 80% cases of not infection.

We can discussion the form to perceive green pass when have particular attention to Italian Case. The Italian minister of Health surprisingly, considering the failures and the poor performance of his work, is already in charge of Public Health in Italy. We argue that without mister Draghi decision to put in charge General Figliuolo, as the responsible of the logistic and vaccinate center of all Italy, should has been only a hope (as the surname of the Italian minister) the 70% of Italian immunization performance. But there are many other sins this minister that will be explained during the paper.

It is clear that lockdown like the one in Italy, save public health service collapse, but shocked and had negative impacts in economy, mental health and public confidence. That was a choice because nobody was prepared to the pandemic (AVENI 2020). The green pass is a technology

that doesn't solve the question (as lockdown) to avoid the pandemic spread. It is demonstrated by the high infection indexes in late September 2021 all over Europe.

Is possible to question why green pass as an innovation technology is something that had to be developed before the spread just to control the infection cases more easily. So, the innovation and the technology were developed late. A different thing is use technology and green pass to travel or to be sure that, in a specific place, there are no infected people. But, to follow a correct process the management of that risk must be defined.

In sum in our opinion to control everyone imposing everyone to show a green pass. is inefficient. It's a waste of time and resources, because everyone must have a smartphone or to print the certificate. The better is to control by sample or when the ticket is purchased if we want to control travelers. At last, the green pass has its reason to birth as a traveling certificate.

3.3 Mitigation of risk. Cost Benefit analysis.

Last but not least the green pass has a goal and a mitigation of risk, that is not the economic impact into economy or the control of workplaces. We argue, as we refer above, that there is no proved causality between lockdown and the total result of economic activity or GNP. To prove that it must be assessed and proved. every economic activity and chain But there is no assessment about the lockdown impacts in every economic activities but only the total contraction of economy, and there is a reliable model or assessment about causality between biological hazard risk mitigation and economic activities.

The process to assess is called biological safety evaluation. Often this means an evaluation and testing process based on the ISO 10993 standard. The biological safety evaluation is one of the elements, i.e. in Europe, of the MD Regulation (EU 2017/745), which is subject to defined requirements. The biological safety assessment plan and report are therefore a key part of the product's technical documentation.

The ONU World Economic Situation and Prospects as of mid-2021 show and annual percentage change in 2019 of 2.5% in 2019 of -3.6% and a forecast in 2021 of 5.4. All developed economies had in 2019, 1.7% increase, in 2020, -5.0 decrease and in 2021 a forecast of 5.0%. If we compare the last financial crises of 2007-2008 in Europe the GNP had the following reductions Ireland -5.0%, United Kingdom -2.8%, Germany -2.3%, Holland and Spain -2.0%, Italy -3.1%, France -1.8%. In both cases we have no proof of direct or measurable effects between the supposed cause and the GNP decrease or increase in every activity.

Thus, it is not clear what are all effects in economy of changes in consumption, restructuring organizations and increase in internet consumption or health expenditures. It seems more that a change in activities or in world economy affect for a while the GNP in a predictable decrease, but no one can tell how and where there is a cause and the relative impact.

The lockdown seems to change the way to do business or the contact with sellers and customers but not where and how much it impacts the real economy. This supports the idea that it is not worth to calculate lockdown effects on economy. But lockdown measures are important for people and their living perceptions. So, then it's a political trick to use the economic figures as a justification of an imposition of lockdown or green pass. The biological hazard risk management has to be developed using the proper tool of analysis and justifications of costs and benefits before with a prevision that must be validated. We have no such previsions neither in lockdown nor for green pass.

In accordance with EU only a survey was carried out by the European Commission to the eHealth network in January 2021, obtaining responses from 19 of 27 EU Member States (Austria, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Italy, Ireland, Latvia, Lithuania, Malta, Poland, Portugal, Slovakia, Spain, Sweden, Cyprus). There appears to be a general agreement on some core data elements of a vaccination digital database in all countries. There is a general agreement on issuing vaccination certificates but all were undecided concerning their intentions to request a vaccination certificate from travellers coming from abroad. Indecision was shown as well as the entities that will be authorised to verify the vaccination certificate. In our view a survey doesn't imply a cost benefit analysis.

And more, the commission considers that there are several points for consideration: Facilitating free movement, other potential non-medical uses as physical participation in events (e.g., leisure, cultural), access to health-related services, e.g., surgeries, work-related presence, e.g. physical attendance at place of work (e.g. office) or work events, removal of restrictions of fundamental rights and easing of reported "lockdown/COVID-19 measures fatigue".

So, the analysis, as we argue using Oslo manual, was about

a survey on organizational and marketing innovation and not a risk management tool or a cost benefit analysis. In other words, the economic impact was mentioned but not calculated. This could be the reason why, when discussed, that considerations from the scientific point of view. Information and research about green pass before to transform it into a mandatory certification are also lacking with respect to scientific questions, which would determine the validity of a "proof of vaccination" such as: whether vaccines prevent asymptomatic infection and transmission of the virus; length of immunity conferred by COVID-19 vaccines; whether available EU-authorized COVID-19 vaccines are effective against current and emergent circulating SARS-CoV-2 variants.

To which must be added that there are many vaccines and methods of immunization, not all vaccines are allowed in all the countries, there are a little number of studies about the transmission of virus and variants between vaccinated. It is essential to differentiate use of certificates for 'safe flying' and for immigration.

3.4 Privacy and sensible information protection

So, we discuss the innovation characteristics, efficiency and the use of it into biological hazard risk management. A final great problem with this innovation is privacy. Are or not health personal information to be secured? And in case of pandemic spread? Technology could save or spread informations so in general terms only the agreement of the individual. There is here a double risk at the same time: privacy and biological hazard. In terms of priority and dangerousness the biological hazard is the first so we can argue the privacy risk is less important and could be passed by. But loss of privacy could be avoided if the green pass is used not for general information but for workers or owners responsible for the organization or firm security. In that way the information of health should be used avoiding loss of privacy and protecting from biological hazard.

In any way there are also other instruments but the green pass to have informations for example with a link by workers data base and health agencies that could inform the health status of a worker, considering that all firms have plan and doctors inside that could be used to form such database also. In fact, there is no need of further legislation to the rules already used for contracting workers, but to expand the application and to oblige firms to develop biological hazard risk plans.

So, a wiser political use of green pass then should have been considering alternatives to green card in order to allow travels all around Europe considering that there are many differences between countries. Talking about sins, in the case of Italy, the Italian Health minister has locked out of Italy part of Italians living or traveling abroad. In Italy Italians couldn't travel from extra European countries to Italy even with immunization they must have a green pass. The problem is how they can have it?

Many "Ordinanze ministeriali" or compulsive rules from Health Ministry of Italy "Ordinanze del Ministro della Salute" in only four months, such as: Ordinanza 8 maggio 2021, Ordinanza 18 giugno 2021, Ordinanza 29 luglio 2021, Ordinanza 28 agosto 2021 and Circolari such: Circolare del Ministero della Salute 28 giugno 2021, Circolare del Ministero della Salute del 30 luglio 2021, Circolare del Ministero della Salute 04 agosto 2021 - pdf: apre una nuova finestra, Circolare del Ministero della Salute del 04 agosto

2021, Circolare del Ministero della Salute 5 agosto 2021, compulsory locked Italians outside their country.

So mostly in this and other similar cases in Europe, this dramatic and guilty behavior of the politicians is a trick turned the initial sense of a technological innovation into a certificate that separate goods, bad and uglies. Not only ethical and domestic rules had had been more carefully evaluated. Luckily not all countries used the same lockdown measures and country controls. And not all countries use the same mandatory rules for green pass. Not all have the same immigrant flow and irregulars or even “no-vax” citizens.

3.5 Green pass and its use. The protests.

The numbers of whom was infected and today is immunized also is not well known. The only “prove” of immunization is global. We know by induction that with more vaccines the less deaths and hospitalizations. So in face of all these differences in spite to use the green pass as a good mark of innovation and technology, the most in Italy but also in France, the green pass has to be perceived as a strike against freedom.

At last, we must say it is not wrong when people protest against green pass. The problem is not to protest against technology but the use of it. The political gamble, like the one in Italy. A protest against the certification or, as was perceived, against vaccination, is not right. A protest against green pass because is useless to be the main control of the pandemic and the biological hazard risk could be managed in another way, is right.

As a final result of the discussion, we can demonstrate that an alternative to negate to travel or to access restaurants but control green pass, it's exacted the opposite. Governmental control must be concentrate only on whom has not COVID-19 or vaccination record available. It will be less stressing to control who is at risk that millions that have no synths or were vaccinated. The claim of some government in Europe to use green pass as a mandatory certificate to control people is a political trick Is unnecessary and, in some way, confirm a theory of conspiracy that states a willing of some government to extend the crisis to maintain its leadership and close control killing people freedom.

In another way round the wrong “perception” of a green pass is the same problem of the lockdown management of the crisis. The most effective and efficient control is not to control millions or negate millions to travel or work but to control only who is infected or has the risk to be infected. Prevention measures are the only measures to be performed without reduce human right, because is justified by the risk. There is no justification to lock millions and to cause decrease in economy like was done, without a sound prove of the causality of all that political mess.

Here a question about technology innovation must arise. Why not to use smart phones telemedicine or digital certificate before. Why nobody thought about the use of an European control system of desase and infected? Unfortunately for all us, we argue, it's not because of the privacy or the guarantee of personal data. We cannot believe that to protect few, in a pandemic situation, we damage all. But that was was happened. Because of few that were out of control all us were locked. Because the lack of local informations and the management of data there was a fear about hospital occupation index. The

increase of hospital and isolation hotspot (like in China) were not well considered but to reduce mobility and commerce yes it was. To produce more vaccine and open licenses was not considered but to discriminate type of afins are.

So the solution is to increase and produce more health equipment and services. That was the correct answer not to lockdown or use marketing features. Shift people without work from undeliverable activities to public services were and it is already the correct answer. Introduce more health workers, train more para-medical, give work for all that have lost them. There something wrong in our countries, we could say with Hamlet, if alternative plans (and we even mention the preventive plans that wasn't ready) have not been discussed and millions of trained people in management had not bens used to develop risk and contingency management.

4. Conclusion and Remarks

Using the Discussion Section to summarize the results the following points are demonstrate for our purpose three points:

- The green pass is an innovation with focus on organization and marketing and not a tool to decide who is good and who is not good, or in other word who is a potential risk for others.
- To use innovation technology like green pass in order to decide about restart economic activities it must be assess with an efficiency analyst and a cost-benefit analysis.
- To use innovations technology like green pass must be incorporated to biological hazard risk management to mitigate pandemic spread following a correct assessment process.
- There is no significative impact of privacy to use green pass but when the use is worth and reduce risk like to prevent working places connected to biological hazard risk plans.

The corollary of the results may support the conclusion that the use of green pass in biological hazard risk like lockdown prevention had some success but it is largely proved that these measures doesn't block or significantly reduced infection. The real reduction is due to vaccination. Again, this not because the lockdown is not a good measure or technique, but because of the management and the practice and the lack of control of the measure itself. On the other side the economic impact, due to lack of protocols and cost-benefit analysis, and the social stress have hit all the population and rise mental and social problems for many citizens. So again, to use such a method must be assess all cost-benefits of the solution.

We can add that it's important to generate alternatives. For instance, a good alternative of lockdown and green pass is to use telephones and temperature control (or other detector of the virus) into the public places more in connection. The telephone could had been used to verify that the owner has vaccination, or the health status, the control and the identity is under protection but the device allow the health system to trace the individual. An app could be used to verify, connecting to the public domain, if there are people around at risk.

In addition to the mobile phone use, the owners of a public place (government for public services as education, private for restaurant or bar or shopping) must had prepared a protocol to be sure there are no people infected in the place

in order to avoid the spread of infection. In this last case no public cost but an additional charge to who is offer products or services in presence. The risk protocol must be the result of education and good practice not an obligation which everyone trays to escape. It's an interest of the offer to avoid problem and deliver a good experience, and products to their clients. In Adam Smith Wealth of Nation Book was proving to be an invisible hand into the market that is the interest of the capitalist to offer something good not because is good for him but for the marketing.

References

- Blakely, T., Thompson, J., Carvalho, N., Bablani, L., Wilson, N., & Stevenson, M. (2020). The probability of the 6-week lockdown in Victoria (Commencing 9 July 2020) achieving elimination of community transmission of SARS-CoV-2. *Medical Journal of Australia*, 213(8), 349. <https://doi.org/10.5694/mja2.50786>
- Davies, N. G., Barnard, R. C., Jarvis, C. I., Russell, T. W., Semple, M. G., Jit, M., & Edmunds, W. J. (2021). Association of tiered restrictions and a second lockdown with COVID-19 deaths and hospital admissions in England: A modelling study. *The Lancet Infectious Diseases*, 21(4), 482–492. [https://doi.org/10.1016/S1473-3099\(20\)30984-1](https://doi.org/10.1016/S1473-3099(20)30984-1)
- <https://www.covidpasscertificate.com/europe-digital-green-pass/>
- Smith, P. (2020). Hard lockdown and a “health dictatorship”: Australia’s lucky escape from covid-19. *BMJ*, m4910. <https://doi.org/10.1136/bmj.m4910>
- Baker, M. G., Wilson, N., & Anglemeyer, A. (2020). Successful elimination of covid-19 transmission in new zealand. *New England Journal of Medicine*, 383(8), e56. <https://doi.org/10.1056/NEJMc2025203>
- Yarmol-Matusiak, E. A., Cipriano, L. E., & Stranges, S. (2021). A comparison of covid-19 epidemiological indicators in sweden, norway, denmark, and finland. *Scandinavian Journal of Public Health*, 49(1), 69–78. <https://doi.org/10.1177/1403494820980264>
- Folkestad, Sigrid. (2020). *Economics, NHH-Norwegian School of*. "Comparing Norway and Sweden: Norwegian coronavirus measures reduced hospitalizations drastically". partner.sciencenorway.no (in Norwegian). Retrieved 26 March 2021.
- Juraneck, S., & Zoutman, F. (2020). *The effect of social distancing measures on intensive care occupancy: Evidence on covid-19 in scandinavia* [SSRN Scholarly Paper]. <https://doi.org/10.2139/ssrn.3588314>
- Bendavid, E., Oh, C., Bhattacharya, J., & Ioannidis, J. P. A. (2021). Assessing mandatory stay-at-home and business closure effects on the spread of COVID-19. *European Journal of Clinical Investigation*, 51(4). <https://doi.org/10.1111/eci.13484>
- Vinceti, M., Filippini, T., Rothman, K. J., Ferrari, F., Goffi, A., Maffei, G., & Orsini, N. (2020). Lockdown timing and efficacy in controlling COVID-19 using mobile phone tracking. *EClinicalMedicine*, 25, 100457. <https://doi.org/10.1016/j.eclinm.2020.100457>
- Perra, N. (2021). Non-pharmaceutical interventions during the COVID-19 pandemic: A review. *Physics Reports*, 913, 1–52. <https://doi.org/10.1016/j.physrep.2021.02.001>
- Dhillon, R. S., & Karan, A. (2020, agosto 12). The u. S. Needs smarter lockdowns. Now. *Harvard Business Review*. <https://hbr.org/2020/08/the-u-s-needs-smarter-lockdowns-now>
- Grafton, R. Q., Parslow, J., Kompas, T., Glass, K., Banks, E., & Lokuge, K. (2020). *Health and Economic Effects of COVID-19 control in Australia: Modelling and quantifying the payoffs of ‘hard’ versus ‘soft’ lockdown* [Preprint]. Infectious Diseases (except HIV/AIDS). <https://doi.org/10.1101/2020.08.31.20185587>
- Hirsch, Cornelius, (31 march 2020) POLITICO “Europe’s coronavirus lockdown measures compared” Archived from the original on 1 April 2020. in September 2021 at <https://www.politico.eu/article/europes-coronavirus-lockdown-measures-compared/>
- OECD & Eurostat. (2018). *Oslo manual 2018: Guidelines for collecting, reporting and using data on innovation, 4th edition*. OECD. <https://doi.org/10.1787/9789264304604-en>
- Henley, J., & Oltermann, P. (2020, março 18). Italy records its deadliest day of coronavirus outbreak with 475 deaths. *The Guardian*. <https://www.theguardian.com/world/2020/mar/18/coronavirus-lockdown-eu-belgium-germany-adopt-measures>
- Ngonghala, C. N., Iboi, E. A., & Gumel, A. B. (2020). Could masks curtail the post-lockdown resurgence of COVID-19 in the US? *Mathematical Biosciences*, 329, 108452. <https://doi.org/10.1016/j.mbs.2020.108452>
- Flaxman, S., Mishra, S., Gandy, A., Unwin, H. J. T., Mellan, T. A., Coupland, H., Whittaker, C., Zhu, H., Berah, T., Eaton, J. W., Monod, M., Imperial College COVID-19 Response Team, Perez-Guzman, P. N., Schmit, N., Cilloni, L., Ainslie, K. E. C., Baguelin, M., Boonyasiri, A., Boyd, O., ... Bhatt, S. (2020). Estimating the effects of non-pharmaceutical interventions on COVID-19 in Europe. *Nature*, 584(7820), 257–261. <https://doi.org/10.1038/s41586-020-2405-7>
- ONU, (2021). *World Economic Situation and Prospects as of mid-2021*. accessed in September 2021 at https://www.un.org/sites/un2.un.org/files/wesp2021_update_1.pdf.
- Lau, H., Khosrawipour, V., Kocbach, P., Mikolajczyk, A., Schubert, J., Bania, J., & Khosrawipour, T. (2020). The positive impact of lockdown in Wuhan on containing the COVID-19 outbreak in China. *Journal of Travel Medicine*, 27(3), taaa037. <https://doi.org/10.1093/jtm/taaa037>
- Hsiang, S., Allen, D., Annan-Phan, S., Bell, K., Bolliger, I., Chong, T., Druckenmiller, H., Huang, L. Y., Hultgren, A., Krasovich, E., Lau, P., Lee, J., Rolf, E., Tseng, J., & Wu, T. (2020). The effect of large-scale anti-contagion policies on the COVID-19 pandemic. *Nature*, 584(7820), 262–267. <https://doi.org/10.1038/s41586-020-2404-8>
- Brauner, J. M., Mindermann, S., Sharma, M., Johnston, D., Salvatier, J., Gavenčiak, T., Stephenson, A. B., Leech, G., Altman, G., Mikulik, V., Norman, A. J., Monrad, J. T., Besiroglu, T., Ge, H., Hartwick, M. A., Teh, Y. W., Chindelevitch, L., Gal, Y., & Kulveit, J. (2021). Inferring the effectiveness of government

- interventions against COVID-19. *Science*, 371(6531), eabd9338. <https://doi.org/10.1126/science.abd9338>
23. Adam, D. (2020). Special report: The simulations driving the world's response to COVID-19. *Nature*, 580(7803), 316–318. <https://doi.org/10.1038/d41586-020-01003-6>.